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RESEARCH

O ensino de primeiros socorros sob a ótica de um currículo de orientação problematizadora

The teaching of first aid from the perspective of a problem-oriented curriculum

El enseño de los primeros auxilios bajo la óptica de un currículo de orientación problematizada

Mariana Dolce Marques ¹, Luís Carlos Lopes Júnior ², Emiliania De Omena Bomfim ³, Carla Pedrosa Marega Luciano Gomes ⁴, Shirlene Pavelqueires ⁵

ABSTRACT

Objective: Identifying and describing the knowledge of graduate students of the first semester of medicine and nursing course at a Brazilian College, related to the subject of first aid before and after the conduct of training guided by active methods of teaching-learning. **Method:** this research is a quasi-experimental type pre-test/post-test, conducted in a Brazilian city in 2009. The sample was non-probabilistic and included 110 students who were enrolled in that series of both courses. There was used a pre-test/post-test consisting of closed questions. Data were analyzed using descriptive parametric statistics. **Results:** among the participants, 35 students were enrolled in nursing course and 75 in the medicine course, with an average age of 24 years old. There was a significantly higher score on the post-test compared to the pre-test. **Conclusion:** the training showed up as a valid strategy for the training of graduate students. It is suggested its dissemination beyond the academic realm. **Descriptors:** First aid, Problem-based learning, Curriculum.

RESUMO

Objetivo: Identificar e descrever o conhecimento de estudantes da primeira série de medicina e enfermagem de uma faculdade estadual, relacionado à temática de primeiros socorros, antes e após a realização de um treinamento norteado por metodologias ativas de ensino-aprendizagem. **Método:** esta pesquisa é um quase experimento do tipo pré-teste/pós-teste, conduzida em uma cidade paulista em 2009. A amostra foi não probabilística e compreendeu 110 estudantes que estavam matriculados naquela série de ambos os cursos. Utilizou-se um pré-teste e um pós-teste composto por questões fechadas. Os dados foram analisados por estatística descritiva e estatística paramétrica. **Resultados:** dos participantes, 35 eram estudantes de enfermagem e 75 estudantes de medicina, com idade média de 24 anos. Houve um aumento significativo de acertos no pós-teste, comparativamente ao pré-teste, obtendo significância estatística em 10 assertivas. **Conclusão:** o treinamento mostrou-se como uma estratégia válida de capacitação dos estudantes. Sugere-se sua difusão para além do âmbito acadêmico. **Descritores:** Primeiros socorros, Aprendizagem baseada em problemas, Currículo.

RESUMEN

Objetivo: Identificar y describir el conocimiento de estudiantes del primer semestre de medicina y enfermería de una universidad brasileña, acerca de primeros auxilios, antes y después de una capacitación enfocada en dos metodologías de aprendizaje activa. **Método:** es un estudio quase-experimental del tipo preprueba y post-prueba, aconteció en una ciudad brasileña en 2009. La muestra no-probabilística fue compuesta por 110 estudiantes matriculados en el primer semestre de los dos cursos. Se usó preprueba y post-prueba con preguntas cerradas. Se analizaron los datos por la estadística descriptiva y estadística paramétrica. **Resultados:** de los 110 estudiantes, 35 eran de enfermería y 75 de medicina, con una media de edad de 24 años. Hubo una mejora de aciertos en la post-prueba, comparado con la preprueba, obteniendo significancia estadística en 10 preguntas. **Conclusión:** la capacitación se parece una estrategia válida para el entrenamiento de estudiantes. Sugere su propagación más allá del ámbito académico. **Descriptor:** Primeros auxilios, Aprendizaje basado en problemas, Curriculum.

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INTRODUCTION

Knowledge and practice of first aid are essential for a better prognosis and a longer survival of victims in emergency situations.¹ When dealing with conditions that threaten the life, it is necessary that the relief efforts are performed effectively, with agility, dexterity and safety in order to avoiding potential sequels and ensuring increased survival.²

The public expects that professionals and students in the areas of health are competent and active facing an emergency. The Basic Life Support (BLS) should also be offered to victims of cardiopulmonary arrest (CRA), outside the hospital by health professionals or properly trained laity. The BLS is set to first approach the victim CRA and covers patent airway, ventilation, artificial circulation and early access to emergency services. In addition, care of advanced support and early defibrillation are added to these maneuvers.³

A study conducted in the United Arab Emirates described a model of systematic teaching first aid and BLS introduced early in the graduate curriculum of a medical school assessed the knowledge, skills and attitudes of students in approach in emergency situations. These findings indicate that after completing the module teaching of the subject, students were considered safer and able regarding clinical skills and how to effective decision making for management of these situations.⁴

Despite its relevance, teaching first aid is still a little widespread among the general population, and learning generally restricted to health professionals or those who are close to universities, hospitals and other centers that promote such courses.⁵ The training in BLS has been insufficient medical schools in the world, is proof that this theme has been emphasized in graduate curricula.⁶

In this context, students enrolled in graduate medical and nursing graduate at the Faculty of Medicine (FAMEMA), participate in the first week of courses, activities that integrate the themes first aid and computerization, in order to build new knowledge about early this theme, besides introducing the methodology of teaching and learning adopted by the institution.

In the 90s, the FAMEMA initiated a comprehensive curriculum reform, a pioneer in Latin America in the use of active methods of teaching and learning. Philosophical, ideological and pedagogical concepts that guide the development of this new curriculum is based on efforts to bringing the world of learning to daily work and ensure an active attitude, criticism and ethics of new professionals to act in accordance with the principles of Health System.⁷ Thus this institution chose and press the integration of Problem-Based Learning (Problem Based Learning - PBL) and the Curriculum, as a methodological model.

This referential assumes that significant learning search functionality and relevance to practice, and is anchored by the constructive integration of knowledge, skills and

attitudes that enable the articulation of learning to learn, in an action-reflection-action.⁷ The PBL process dates back to experiences of Canada and McMaster University in the Netherlands (Maastricht), and has been used in Brazil in institutions such as the State University of Londrina, Federal University of Ceará, among other public and private institutions, primarily in the areas of higher education health. This methodology has the conceptual framework theoretical thoughts of Dewey, who believed that meaningful learning emerges from situations or problems that intentionally generate doubts or intellectual disturbances and whose performances get stronger with constructivist practice.⁸⁻⁹

The Problemization is based on the theoretical model of the Method of the Arc of Charles Maguerez. It has been demonstrated through a five-step scheme, a model that converges to the abovementioned method, starting from reality or a clipping of this. The steps are: 1. Observation of reality; 2. Key points; 3. Theorizing; 4. Chances of solution; and 5. Application to reality.¹⁰

Thus the student follows the steps proposed by the Method of Arc in a process of action-reflection-action, from a problem experienced or observed in reality and is further analyzed and evaluated scientifically to then be "returned" to that reality, in order to modify it.¹¹ The PBL and the Problemization complement each other in the training of health professionals, once, transform the students into responsible for their own learning, as subjects and active participants of a society and reality that needs assistance.

Among the early activities of the students enrolled in medical and nursing courses, there is a workout called "Week of the Integrated Emergency Access Computerization in FAMEMA", which is coordinated by two doctors nurses teachers, and with the participation of students from both courses belonging to the ALFA Project / FAMEMA - Extension Project and Research in the area of pre-hospital emergency and accident prevention.¹² Thus, we worked with the following research hypothesis: there is acquisition of new knowledge on the subject of first aid inflows by students in undergraduate medical and nursing at FAMEMA, after participating in the "Week of the Integrated Emergency Access computerization in FAMEMA". In this sense, the aim of this study was to identify and describe the knowledge these students enrolled in the first series of courses in medicine and nursing at FAMEMA related to the topic of first aid, before and after completion of training.

METHOD

This research is an analytical study (quasi-experimental design) the pre and post-test cross-sectional and quantitative data approach, conducted in a city in central-western São Paulo in March 2009, which was approved by the Research Ethics Committee of FAMEMA, under protocol number 047/09.

The sample was non-probabilistic and of convenience, the inclusion criterion was: be enrolled in the first semester of courses in medicine or nursing FAMEMA. Exclusion

criteria was established that student on the condition of failure in the first series did not participate in the study. Thus, our final sample consisted of 110 students.

Week of Integrated Urgency to the Access to Computerization in FAMEMA

The week is organized into four distinct periods. Initially, students are divided into groups and participate in a workshop containing five practices stations fifty minutes each, in which are discussed the following topics: airway clearance, cardiopulmonary resuscitation, specific injuries, spinal immobilization, and the immobilization of ends. The theoretical concepts are articulated with practice. Such content are demonstrated and performed by students on mannequins and simulations among peers involved are also held. For this activity we rely on the use of teaching materials such as mannequins, boards, cervical collar, automatic defibrillator, manual respirator, splints, bands, among others, in order to facilitate learning.

In the second step, students are introduced to the physical structure and FAMEMA library collection, and together with the team of librarians, learning to perform qualified searches monographs, dissertations, theses and journals indexed in electronic databases and scientific data through institutional software. At this moment qualified search descriptors are used in health sciences that can culminate in answers to the problems / concerns raised in order to scientifically such restrictions on their practices experienced workshop.

In a third step, each group presents in the form of theater, an urgent situation experienced by the students, with the support the current literature on the subject, with emphasis on the correct and updated to be played in each case procedure.

To finish the Week, the students participated along with the services of pre-hospital care of Marília (Service Mobile Emergency - SAMU and Rescue Fire Brigade), a simulated accident with twenty victims being rescued by students properly trained.

For data collection we used a pre-test and post-test. The pre-test consisted of a questionnaire with closed questions which are presented in the assertions to be classified as right or wrong format. Such structure of the questionnaire was based on similar instruments used in previous Brazilian studies^{7,13}, being adapted to the target population of this study (young adults had completed high school). Thus the pre-test was divided into three domains: 1) demographic characteristics; 2) experiences related to the topic of first aid; and 3) approach to victims in emergency situations. The post-test was composed of the same three questions posed in the field of pre-test, for comparison, in addition to open-ended questions that assessed training "Week of Integrated Urgency to the Access to Computerization in FAMEMA".

The content of the questionnaire was assessed by a panel of judges with expertise in the field for face validity and content. Data collection occurred in two stages: at the beginning of training, when they were assembled all students enrolled in the first series of courses in medicine and nursing institution and made to read the Term of Consent, at which time subjects were invited to participate voluntarily in the study and to answer the pretest questionnaire; and the second moment occurred at the end of training, when the post-test was applied. For comparison of pre and post-test students were coded by the number of academic record which was reported in each questionnaire so we could do the same pairing

and proceed with the statistical analysis, secrecy and being assured anonymity of research subjects.

For analysis of the collected data, it was used the Statistical Package for Social Sciences (SPSS) version 15.0. It proceeded with descriptive statistics (relative frequency (%), mean, standard deviation) to characterize the study sample and the parametric analysis by the paired Student t test for dependent samples to compare continuous variables related to assimilation of contents learned in training. The normal distribution of data was verified by Kolmogorov-Smirnov test, with α set at 5%. Differences between variables were considered statistically significant when $p < 0.05$ for $\alpha = 5\%$; a confidence interval of 95% is established.

RESULTS E DISCUSSION

At the time of conducting the research were 80 students enrolled in the first semester of medical school and 40 students in the first semester of the nursing program with a total student body of 120 students. Of the 120 students enrolled in these undergraduate courses FAMEMA, 110 (91,66%) answered the pre-test and post-test, the other 10 students answered only the pre-test and chose not to answer the post-test and therefore, these were not included in the final analysis of this study. As our final sample of 110 students, 35 students were enrolled in the undergraduate nursing and 75 medical school, 82 students (74,5%) coming from southeastern Brazil. Most $n = 80$ (73%) are female, mean age 24 years ($SD = 6,5$) and 101 students (91,9%) were starting the first degree.

Regarding previous experiences in first aid, 94,5% ($n = 104$) of students reported having already experienced at least one emergency situation, however, the majority reported that he did not know how to proceed at that time. Among the subjects, 41,8% ($n = 46$) said they never had any issue in question related to training. However, other individuals who have had such training, mentioned the Training Course Conductors in 100% of the responses. Although this approach to the theme, 85,4% ($n = 94$) of these subjects did not feel prepared to perform such procedures.

From the questionnaire, there were analyzed 26 assertions among which 10 showed significantly higher after training arrangements in accordance with the Student t test. The table below brings these 26 questions, relating main theme addressed in each question with the percentage of correct answers in the pre-test and the percentage of correct answers in the post-test as well as the level of significance attained.

Table 1. Topics covered in the pre-test and post-test paired, percentage of hits, difference of percentage of hits in the tests and significance level. Marília, 2010.

Question	Theme	(%) hit pre-test	(%) hit post- test	Differences in % of hits	p value
Q 1.	Obstruction of VAS ¹	89,09	99,09	10%	0,058
Q 2.	Injuries	88,18	97,27	9,09%	0,062
Q 3.	Fracture	90	98,18	8,18%	0,077
Q 4.	Convulsive crisis	90	96,36	6,36%	0,080
Q 5.	Electric shock	88,18	93,63	5,45%	0,080
Q 6.	First aid	95,45	100	4,55%	0,089
Q 7.	Bleeding	70	98,18	28,18%	0,009*
Q 8.	Epistaxis	33,63	86,36	52,73%	0,001*
Q 9.	First aid	97,27	100	2,73%	0,150
Q 10.	Syncope	50,90	91,81	40,91%	0,004*
Q 11.	Foreign body in the eye	60	95,45	35,45%	0,006*
Q 12.	Immobilization in politrauma	45,45	97,27	51,82%	0,001*
Q 13.	Multiple Trauma	90	98,18	8,18%	0,077
Q 14.	CPR ²	40,9	89,09	48,19%	0,002*
Q 15.	Immobilization of extremities	75,45	93,36	17,91%	0,030*
Q 16.	Syncope	90	99,09	9,09%	0,062
Q 17.	Drowning	97,27	100	2,73%	0,150
Q 18.	Burn	55,45	94,54	39,09%	0,005*
Q 19.	Drowning	97,27	100	2,73%	0,150
Q 20.	Injuries	80	90	10%	0,058
Q 21.	Burn	78,18	98,18	20%	0,020*
Q 22.	PHC service request ³	52,72	100	47,28%	0,002*
Q 23.	First aid	97,27	100	2,73%	0,150
Q 24.	Multiple Trauma	89,09	98,18	9,09%	0,062
Q 25.	Syncope	77,27	90	12,73%	0,045
Q 26.	Convulsive crisis	90,90	100	9,1%	0,062

¹ - Upper Airways; ² - Cardiopulmonary Resuscitation; ³ - Pre-Hospital Care; * p value < 0,05.

When questioned about what specialist service would call when they come across a situation of emergency clinic (for example, a convulsive crisis), 38,18% (n = 42) of the students reported that would call the 192 service; 26,36% (n = 29) would call the 193; 16,36% (n = 18) came the 190 and still, 19,09% (n = 21) claimed not to know.

When asked about what data to be observed and informed the Central Medical Regulation during an emergency, students could choose more than one alternative being that, 90% (n = 99) would report about injuries, 87,27% (n = 96) seek to inform the "vital signs" of the victim and 61,81% (n = 68) would report skin coloration and level of consciousness in the service. However, 94,54% (n = 104) also indicated that they do not know exactly what to tell.

Regarding the request of APH, subject mentioned in assertive 22, service was exposed a problem situation where the service requester describes witnessed the accident, however, omits the victim is unconscious, emphasizing only the injury that same features. To qualify this assertion in right or wrong, we observed a change in the hit rate of 52,72% (n = 58) at pre-test to 100% (n = 110) at post-test, obtaining statistical significance with $p = 0,002$.

The steps of pre-hospital care are: 1) Request for help and triggering; and 2) regulation and medical advice. In Brazil, the telephone number 192 corresponds to the SAMU and is considered the national emergency number for health problems, but many cities still do not have this service, knowledge of the local emergency number, which can be from the Fire Department is required - redemption (phone 193). The trigger can be done by the victim himself or of damage to health by a requester, usually via telephone.¹⁴

The request of the APH service that will be answered by the assistant coach of medical regulation (TARM) consists of collecting accurate information that is routed through a brief questionnaire with an average of 30 to 60 seconds. Soon after, the request is forwarded to the physician who will evaluate presume the severity of the case and direct the necessary resources to resolve, or provide medical advice, if deemed necessary to send vehicles for this care. It is noteworthy that during counseling, the doctor will accept the request, providing security to the applicant / patient and guide you to seek basic health or other units, as the assessment of the case and in accordance with the guideline of hierarchy and organization levels of attendance by the SUS (Unified Health System).¹¹ Thus, even if the requestor does not know what data are essential to inform staff of regulation, both the physician and the TARM will question him about the situation of the victim to a more accurate assessment of the case and thus determine its resolution.

The theme epistaxis (question 8), was approached in the following situation: "in the presence of nasal bleeding facial trauma, care performed consists of compression nostrils, use of cold compress and guidance for the victim to lift your head." To this assertion was incorrect, students submitted a percentile of accuracy ranged from 33,63% (n = 37) at pre-test to 86,36% (n = 95) at post-test, and this difference was statistically significant ($p = 0,001$).

Epistaxis is the most common emergency treated by otolaryngologists, being more affected than adults. About 10% of the general population will experience nasal bleeding in his lifetime. Epistaxis has been researched in the hospital, however, the first studies that demonstrate compliance with epistaxis are scarce.¹⁵ Most nosebleeds (95%) start in small areas of the anterior region of the nasal septum, and this highly vascularized area.¹⁵ Researchers studying first aid care in relation to infant epistaxis UK schools through a questionnaire applied to teachers who performed first aid at these schools have concluded that there is still confusion about the place of the pressure on the nose to stop the bleeding.¹⁶

The initial treatment of epistaxis is recommended to keep the patient's head in neutral position and apply pressure (pinching with your fingers) the lower portion of the nose (cartilaginous portion) for at least 10 minutes in an attempt to stop the nosebleed.¹⁶ Other scholars report that simultaneous compression, the use of cold compress in order to facilitate local vasoconstriction is effective.¹⁵

Concerning the question about cardiopulmonary resuscitation (CPR), 40,9% (n = 45 students) in the pre-test showed how incorrect the assertion that only considered performing chest compressions, mouth-to-mouth and transport the victim to conduct a forward CRA. This percentile was changed to 89,09% (n = 98) at post-test (p = 0,002).

According to a recent publication¹⁴ that defines guidelines for CPR and emergency cardiovascular care, recommendations for lay adapted to the Brazilian reality, that deal with the sequence of care that is fallen victim to performing CPR include: 1) Check site security; 2) To assess the responsiveness of the victim by touching her shoulders and wondering if it is good; 3) If the victim responds, ask if you can help it. If the victim does not respond, call for help or ask someone to do (call the emergency medical service, for example, the SAMU-192 and get an Automated External Defibrillator - AED); 4) Observe the chest and abdomen of the victim to assess your breathing (in less than 10 seconds) and if the victim does not breathe or breathe abnormally start CPR; 5) positioning the hands and performing chest compressions continuous frequency of at least 100 compressions/min, depth equal to or greater than 5 cm, always allowing the chest recoil after each compression; 6) Once the AED arrives, one should immediately turn and follow his instructions.¹⁴

In situations of CRA attended by laymen, the authors emphasize the importance of asking for help and the search for the DEA, the start of CPR maneuvers immediate chest compression, called "hands only", not delaying compressions due to artificial respiration; beyond use, so available, the DEA.¹⁴

As the initial approach of a burn injury, subject of questions 18 and 21 respectively had differences of percentage of correct responses in the pre-test and post-test of 39,09% (p = 0,005) and 20% (p = 0,020). In Brazil occur one million new cases per year burning¹⁷ being between a leading cause of death and disability. The most common causes of burns are hot liquids (boiling water, hot water, cooking oil, etc.), a flame of fire (use of alcohol liquid to start the fire) and contact with hot objects (toasters, heaters, furnaces, etc.), the most common home accidents in children and the most common accidents in adults.¹⁷ It is known that 90% of burns are preventable. Thus, education and prevention campaigns need to be disseminated to different target populations (children, adults and elderly) and environments (schools, industry, condominiums, recreational areas, indoors, etc.).¹⁷

The first care for the burn victim is important for a successful treatment. Two actions are indispensable in first aid in this situation: removal of the heat source and the cooling area burned¹⁸. You must remove the heat source away from the victim of the same or terminate it, for example, put out the fire, remove the victim from the source or heated grid, with no conducting object (example: dry wood). The cooling of the burned area should be done with water for 10-20 minutes in order to stop the progression of the heat, limit the depth of the lesion and relieve pain. Attention should be given as to the extent of the burn. The longer is, to be shorter cooling the risk of hypothermia and only cooled burned area and the remainder of the heated body. Then you should refer the victim to a health facility with lesions covered with clean cloths moistened.¹⁸⁻⁹

Question 12 addressed the issue of detention in polytrauma patients. This assertion addressed an empirical knowledge among the people that should not move the victim who has suspected fractured neck. The percentage of correct answers increased from 45,45% (n

= 50) at pre-test to 97,27% (n = 107) in the post-test, a statistically significant difference (p = 0,001).

Guidelines such as the Advanced Trauma Life Support (ATLS) and Prehospital Trauma Life Support (PHTLS) are guidelines that dominate the area of trauma care and are used by about 50 to 60 countries worldwide.^{4,20} These guidelines advise one priority practice in the care of trauma victims, namely the use of the cervical collar.⁴ The use of cervical collar is a practice that has not changed for over 30 years and is responsible for preventing secondary injury to the spinal cord after immobilization of a potential column unstable.²¹

The American Association of Neurological Surgeons (AANS) and the Congress of Neurological Surgeons (CNS) recommend that in the prehospital environment where all trauma patients with acute cervical spinal cord injury or trauma known or suspected should receive spinal immobilization.²² The approach of the traumatized victim follows a mnemonic rule known as "ABCDE of trauma", which consists of a systematization of care of trauma victims proposed by ATLS.²⁰ The service begins at step A (= airway opening airways and immobilization cervical spine), followed by B (= breathing respiration and ventilation), C (circulation = circulation, infusion and hemorrhage control), D (disability = level of consciousness) and E (= exposition exposure and prevention of hypothermia), reaffirming that one should only proceed when the service met the previous step. Thus, it is clear the importance of cervical immobilization and protective attitude of the cervical spine towards the care and transport of trauma victims.

CONCLUSION

This study enabled the identification and the description of the knowledge of students ingressed in the first year medical and nursing FAMEMA related to the topic of first aid, before and after completion of training which fits into the undergraduate curriculum of these courses.

The first aid training FAMEMA which was guided by questioning and PBL proved a valid strategy for training the population studied here, since there was positive and significant statistical associations with the variation of correct pre-test to post-test. In the post-test was verified learning of the participants, given that the majority demonstrated knowledge in the face of first aid situations that were presented to them.

This study shows the importance of education in first aid inserted early in an undergraduate curriculum in nursing and medicine. It is noteworthy, the relevance of continuing training on performing basic first aid principles in this institution. It is suggested that this type of instruction in first aid is increasingly widespread and beyond the scope of the university, because it represents an academic-social commitment.

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